

**Amendments to the Claims:**

The listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

**Claims 1-9 (canceled).**

**Claim 10 (new):** A sensor apparatus for determination of an internal pressure of a motor vehicle tire, comprising:

at least one measurement sensor in the form of an optical fiber; and

an evaluation and computer unit,

wherein

when light is passed through the optical fiber and the optical fiber is stressed, the light is changed,

the evaluation and computer unit detects changes in light passing through the optical fiber and determines at least one of the shape and size of a contact area of the tire as an indicator of the internal pressure in the tire.

**Claim 11 (new):** The sensor apparatus as claimed in claim 10, wherein an evaluation unit uses low-pass filtering to eliminate a wheel load influence on at least one of the shape and the size of the tire contact area.

**Claim 12 (new):** The sensor apparatus as claimed in claim 10, wherein the at least one measurement sensor is connected to the evaluation and computer unit by an optical transmission device.

**Claim 13 (new):** The sensor apparatus as claimed in claim 10, wherein the evaluation and computer unit is arranged in the tire.

**Claim 14 (new):** The sensor apparatus as claimed in claim 13, wherein the evaluation and computer unit is vulcanized into the tread of the tire.

**Claim 15 (new):** The sensor apparatus as claimed in claim 10, further comprising:

a temperature sensor which measures a tire temperature,

wherein

the evaluation and computer unit detects tire heating from the temperature sensor, and a difference between a nominal pressure and an actual pressure is determined with consideration of the detected tire heating and an estimated tire flexing work.

**Claim 16 (new):** The sensor apparatus as claimed in claim 10, wherein the evaluation and computer unit includes an evaluation unit for a fiber-optic Bragg grating system, and change in light wavelength is determined with passive edge filters on independent channels.

**Claim 17 (new):** The sensor apparatus as claimed in claim 10, further comprising:

a superluminescent diode as a light source for the light passed through is the optical fiber.

**Claim 18 (new):** The sensor apparatus as claimed in claim 15, wherein the tire temperature is measured continuously by the temperature sensor, and tire flexing work is determined by the evaluation and computer unit from the measured tire temperature.